DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for the California Freshwater Shrimp

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: The Service determines the California freshwater shrimp (*Syncaris pacifica*) to be an endangered species. The species is threatened by introduced predatory fish and deterioration or loss of habitat resulting from water diversion, impoundments, livestock grazing, agricultural activities and development, urbanization, and water pollution. The California freshwater shrimp is known from only twelve streams in Napa, Marin, and Sonoma Counties, California. This rule implements the protection provided under the Endangered Species Act of 1973, as amended, for the California freshwater shrimp.

EFFECTIVE DATE: November 30, 1988.

ADDRESSES: The complete file for this rule is available for inspection, by appointment, during normal business hours at the U.S. Fish and Wildlife Service, Fish and Wildlife Enhancement Field Station, Division of Endangered Species, 2800 Cottage Way, Room E-1823, Sacramento, California 95825.

FOR FURTHER INFORMATION CONTACT: Mr. Gail C. Kobetich, Field Supervisor, at the above address (916/978-4866 or FTS 460-4866).

SUPPLEMENTARY INFORMATION:

Background

The California freshwater shrimp, *Syncaris pacifica* (Holmes), is a decapod crustacean of the family Atyidae. Samuel J. Holmes first described *S. pacifica* as *Miersia pacifica* in 1895. In 1900, Holmes erected a new genus, *Syncaris*, for the California atyids based on notable differences in the chelae (pinchers) and rostrum (horn-shaped structure between the eyes). *S. pacifica* can be distinguished from *Palaemonias*, the only other atyid genus in the United States, by its well-developed stalked eyes. *Palaemonias* are blind and dwell in caves in the eastern United States. *S. pacifica* is the only surviving species in the genus *Syncaris*.

Adults may reach 5 centimeters (cm) (2½ inches) in length. Nearly transparent in water, the adults appear out of water to be greenish-gray to almost black with pale blue uropods (tail fins). An adult female lays relatively few eggs (50–70, Hedgpeth 1975; 100–120, Eng 1981). While she carries the eggs on her body for 8 to 9 months, slow overwintering development of the eggs occurs. During this period, many larvae die due to adult female death and genetic or embryonic developmental problems. As a result, the number of embryos emerging from the eggs during May are reduced typically by 50 percent. During the first summer, larval growth is rapid, but sexual maturity is not reached until the second summer.

The California freshwater shrimp is endemic to gentle gradient (less than 1 percent), low elevation (below 115 meters (380 feet)), freshwater streams in Marin, Napa, and Sonoma Counties, California. The species, a true freshwater shrimp, inhabits quiet portions of tree-lined streams with underwater vegetation and exposed tree roots. Once common in the three counties, *S. pacifica* now occurs only within restricted portions of 12 streams. It cannot tolerate salt or brackish water and does not occur in the intertidal reaches or estuarine areas of any of the streams (Born 1968, Hedgpeth 1968, and Li 1981). The shrimp's transparency, secretive habits, and rapid escape behavior contribute to its obscurity and make it difficult to capture or detect by the casual observer. The California Department of Fish and Game (CDFG) attributed the decline in shrimp populations primarily to degradation and loss of its habitat resulting from increased urbanization, overgrazing, agricultural development, dam construction, and water pollution (CDFG 1980). Essentially compatible with native fish species, *S. pacifica* is threatened by the introduction of exotic predators, especially fishes of the sunfish family. Because of the species' low reproductive potential, slow maturity, restricted distribution, and specialized habitat requirements, *S. pacifica* is particularly vulnerable to habitat loss and predation by exotic species against which its natural defense mechanisms are ineffective.

On June 4, 1974, the Service entered into a contract with the Sierra Club Foundation to investigate the status of freshwater shrimps in Pacific drainages. A final report under this contract was submitted in September 1975 by Dr. Joel W. Hedgpeth. Dr. Hedgpeth concluded in his report that *Syncaris pacifica* had been extirpated in some streams and was reduced in distribution and abundance in others. This report cited dredging, streambed gravel stockpiling, stream diversion, and building temporary summer gravel dams on the Austin Creek system as the major factors responsible for the decline of the California freshwater shrimp. Larry Serpa (1985) reported the species inhabited eleven streams in the Russian River, San Francisco Bay, and other coastal drainages. These streams are East Austin, Salmon, Lagunitas, Big Austin, Sonoma, Huichica, Green Valley, Jonive, Walker, Yulupa, and Blucher. This survey included a total of 52 streams in the three drainages. Bill Cox of CDFG (personal communication 1986) found shrimp in the Napa River near Calistoga. This finding increases the total number of streams in the area known to contain shrimp to 12 out of the 53 surveyed.

The California freshwater shrimp was proposed as a threatened species on January 12, 1977 in the **Federal Register** (42 FR 2507). That proposal was withdrawn on December 10, 1979 (44 FR 70796), under a provision of the 1978 amendments to the Endangered Species Act of 1973, which required withdrawal of all pending proposals if they were not finalized within 2 years of the proposal. On March 23, 1980, the Service received from CDFG a series of annotated maps delineating the known, current distribution of the California freshwater shrimp. These maps summarize the distribution data collected by CDFG in 1979 and 1980. Additional distributional

data were received by the Service from the CDFG on October 30, 1980. CDFG later sent to the Service detailed information on the distribution, life history, and status of the shrimp in 1981 (Eng 1981, Serpa 1985). These maps and additional data constitute significant new information on which to make a determination of endangered status for the California freshwater shrimp.

In the **Federal Register** of April 22, 1987 (52 FR 13254), the Service proposed the California freshwater shrimp as an endangered species. On June 8, 1987, a request for a public hearing on this proposal was received from S. Reid Gustafson, Vice President, Shea Homes, San Jose, California. On June 19, 1987, the Service extended the comment period, which originally closed June 22, 1987, to August 1, 1987, and gave notice of the public hearing (52 FR 23317). The Service held the public hearing on July 15, 1987. On July 31, 1987, the Service extended the comment period an additional 60 days to October 1, 1987 (52 FR 28680), to accommodate several requests.

Summary of Comments and Recommendations

In the April 22, 1987, proposed rule and associated notifications, all interested parties were requested to submit factual reports or information that might contribute to the development of a final rule. Appropriate State agencies, county governments, Federal agencies, scientific organizations, and other interested parties were contacted and requested to comment. A newspaper notice was published in the *San Francisco Chronicle/Examiner* (July 9, 1987), *Santa Rosa Democrat* (July 10, 1987), *Argus-Courier* (July 10, 1987), and the *Independent Journal* (July 10, 1987), all of which invited general public comment. A total of 49 written comments on the listing were received and 2 comments not pertaining to the listing. A total of 21 individuals attended the public hearing in Santa Rosa, California, on July 15, 1987, and 11 provided testimony. The two additional **Federal Register** notices extending the comment period and announcing the public hearing were also published in the aforementioned four newspapers in June and July, respectively.

During the comment period, totaling approximately 6 months, 49 comments on the listing were received. Of the 35 comments that were substantial and stated a position on listing, 18 (36.7 percent) supported the listing and 17 (34.7 percent) did not; 14 (38.6 percent) were nonsubstantive. These written comments and the nine statements presented at the public hearing are discussed below.

Multiple comments from the same individual or entity are combined and regarded as one response.

Support for the listing proposal was voiced by one State agency (California Department of Fish and Game), seven conservation organizations (or branches thereof), and 10 other interested parties.

Opposing comments and other comments questioning the rule can be placed in a number of general groups. These categories of comments, and the Service's response to each, are listed below.

Comment 1: Several questions were raised pertaining to the available biological information on the shrimp. Have enough surveys been done to determine that the shrimp does not occur in other streams in the area? What are its specific habitat requirements? Without complete information on the above topics, is this listing premature?

Service response: The Service finds that surveys since 1950 (testimony of Dr. Hedgpeth at the public hearing) and the recent surveys (Hedgpeth, 1968, 1975, Eng 1981, and Serpa 1986) of 53 streams in the area, including the historical locations of the shrimp, provide adequate information on the distribution, habitat requirements, and threats to the species to warrant the present action for the shrimp. Further studies on the distribution would consume additional time during which the shrimp would not be protected. Further, because of the strict habitat requirements of the species, the shrimp is not likely to occur in other areas. In the Background, and Factors Affecting the Species sections of this rule, the natural habitat and requirements of the shrimp are described. Pertinent studies on the habitat requirements of the shrimp are listed in the References Cited section of the proposed rule and the final rule. In some cases, the data were supplied by personal communications with field biologists and are so noted in the text.

Under § 424.11(b) of the regulations for listing endangered species (50 CFR Part 424), the Secretary shall make any determination solely on the basis of the best available scientific and commercial information regarding a species' status, without reference to possible economic or other impacts of such determination. The State of California, recognizing the decline in the California freshwater shrimp, listed it as endangered in 1980. The species continues to lose habitat and decline in distribution and population size. Therefore, based on the available information regarding the status of the shrimp, the Service believes immediate listing is warranted.

Comment 2: What is the difference between the two types of summer dams used in the area? What are the effects of the summer gravel dams as well as gravel mining and removal on the shrimp and its habitat? It was suggested that dams such as those built by the Cazadero Dam Committee (a group of private citizens and property owners along the Austin Creek system) on the Austin Creek System in Sonoma County and the Giacomini Dam in Marin county have actually helped the shrimp. Commenters stated the need for dams in the area to provide water for drinking, fire protection, and recreation during the dry season.

Service response: Presently, there are two methods of temporary summer dam construction in those counties where shrimp are known to occur. One method and probably the more damaging to the shrimp, is the practice of using a bull-dozer or other earth-moving equipment to create a dam by pushing gravel from the streambed over culverts placed in the live stream. Flash boards may be placed over the opening of the culvert to regulate the amount of water retained behind the structure. This method causes extensive siltation downstream during the initial construcion period and later when the dam is washed out during the heavy rainstorms in the fall. Siltation changes the substrate from gravel to fine silt. this silt suffocates the source of food for the shrimp such as other small invertebrates and encrusting organisms that live in the gravel substrate and on submerged rocks.

The other method of temporary summer dam construction in this area is done by placing permanent structures or abutments on opposite shores of the streams and using a crane to suspend a movable bridge onto these structures. This temporary bridge is put in place during the spring or early summer and removed in the fall. This type of dam has no adverse affect on the shrimp because the aquatic habitat is not altered.

The adverse effects of the summer gravel dams on the shrimp are summarized under section A of the Summary of Factors Affecting the Species in the final rule. Temporary dams constructed only of gravel destroy shrimp habitat in two ways. First, the dams are allowed to remain in the streams until the winter rains wash them out. This gravel is then carried downstream and deposited in the undercut banks adversely affecting the essential habitat for the shrimp. When streamflows are high during the winter

and spring, *Syncaris* are found under submerged undercut banks where fine roots extending into the water provide cover. In such a habitat, the shrimp are sheltered from the strong currents of winter flows. During the summer and fall when the streamflow is lower, the shrimp are associated with streamside vegetation that extends into the water and provides shade as well as appropriate hiding places. These essential areas are degraded as habitat for the shrimp when they are filled with sand and gravel. Second, when the dams are in place throughout the summer, a warm, long, narrow lake is created in what was once a cool stream environment. Because the feeding behavior and thermoregulatory adaptations of the shrimp are specific to survival in a cool, slow-moving water environment, they are not adapted to a warm, still water habitat and will eventually die if they cannot return to the cool stream environment. They do occur in deep cool pools in the stream. These dams also entrap a large number of aggressive, fast growing, exotic fish species which prey on the shrimp and other aquatic organisms.

There is no evidence that the temporary summer gravel dams, such as those constructed by the Cazadero Dam Committee, have helped the shrimp. The shrimp habitat of East Austin Creek has been degraded by the dams to the extent that the present population of shrimp is discontinuously distributed. The shrimp population cannot maintain itself in the reaches of the stream with dams without being replenished from small upstream refugia. These dams prevent the movement of shrimp from upstream refugia to downstream feeding, mating, and hiding sites.

The Giacomini seasonal dam was placed in the intertidal zone in the lower end of Lagunitas Creek in Marin County. This dam is nearly 10 miles downstream from usable shrimp habitat and is not expected to affect this species because the shrimp cannot tolerate brackish water. As the dam has prevented the intrusion of brackish water into the creek, it has increased the upstream usable habitat of the shrimp. There are no shrimp downstream of this dam to be adversely affected by siltation during annual dam construction.

Gravel and aggregate mining in the area has probably not harmed the shrimp since it provides a means by which gravel washed downstream from the seasonal dams can be removed from the dry steambed without significantly causing siltation. Gravel and aggregate mining is not done in the live stream and sorting, grading, and washing activities are done away from the stream. The tailings from this activity are placed in sediment ponds that do not allow effluent to enter the stream. Most of the damage to the shrimp habitat by gravel mining occurred prior to passage of the National Environmental Policy Act in 1970 and subsequent environmental legislation which prohibits certain activities in waterways. Present gravel and aggregate mining operations are not known to disturb or damage shrimp habitat.

Comment 3: Will the listing of the species mean an end to the construction of summer dams?

Service response: Changes in the size, number, method of construction, and method of removal of summer recreational dams on the Austin Creek system, which includes Austin, Kidd, and East Austin Creeks, have been required through the Corps of Engineers permitting process. Only East Austin has a population of shrimp, thus, only these dams may be affected by the listing through the Corps of Engineers permitting process.

These dams change a cool, slow-moving stream into a warm, long, narrow lake which lacks pool/riffle areas and overhanging vegetation, essential to the shrimp's survival. The present method of gravel dam removal (by letting the winter rains wash the dams out), is more harmful than the construction technique of pushing the gravel up from the streambed into gravel dams. When dams wash out, the gravel and fine silt are deposited in the undercut banks which are essential habitat for the shrimp (see comment 2). Presently, an experimental method of summer gravel dam construction is being tried under a Corps of Engineers permit to the Cazadero Dam Committee. As a condition of this permit, the present number (38) and size (5 to 8 feet high, approximately 12 feet at the top, 26 feet wide at the bottom, and 55 feet long to extend across the stream channel) of the dams on the Austin Creek system is to be reduced over a 5-year period. The number of beaches also will be reduced. These conditions were placed on the Cazadero Dam Committee permit to upgrade the habitat for anadromous fish species and to avoid adverse impacts to the shrimp in East Austin Creek. This new dam construction method involves digging a pit in the dry streambed and connecting the pit to the live stream by a culvert. Its impact on the shrimp habitat is not fully known. However, direct and indirect effects on the shrimp by siltation are significantly reduced because a swimming hole is formed outside of the live stream and the pool/riffle characteristics of the stream remain intact. Further, this method has been tried in East Austin Creek where there are three gravel dams. There are 24 summer gravel dams on the lower reaches of Austin Creek and the shrimp no longer occurs in these reaches of the stream. However, shrimp could occur in isolated refugia in the upper reaches of the stream. In its present state, Austin Creek is not suitable habitat because it lacks undercut banks and overhanging vegetation which are the essential habitat requirements for the shrimp. Extensive rehabilitation of the aquatic habitat would be necessary to convert this stream to usable shrimp habitat. When the number and size of the dams are decreased by 1990, a more natural pool to riffle ratio should occur in all streams in the Austin Creek system, which is desirable habitat for the shrimp. Overhanging vegetation can be encouraged to grow and provide shelter and food for the shrimp.

The Service will work through the section 7 consultation process of the Act to assist agencies in the planning phase of water dependent projects and measures are likely to be developed and implemented to reduce or avoid adverse effects on the shrimp and its habitat. The Service will provide technical assistance and advice to parties interested in increasing and enhancing the shrimp habitat through appropriate mitigation measures.

Comment 4: Several commenters were concerned that the shrimp will be collected and transferred into streams outside its known distribution, thus possibly making such other areas subject to the provisions of the Act.

Service response: Although shrimp could be placed in other streams in the area, it is doubtful that a population could become established because of the specific microhabitat requirements of the shrimp. Historically, these microhabitat requirements have limited the distribution of the shrimp. During the development of the recovery plan for this species, the Service will explore the need to reintroduce shrimp into areas from which they have been extirpated. It is generally Service policy not to introduce a species into an area outside of its known historical range. If a population of shrimp is discovered in areas not presently known to the Service, these shrimp will receive the same protection under the Act as those in known locations.

Comment 5: What are the economic impacts of listing the shrimp and what affect will the listing have on gravel operations, agriculture, urban development (construction), recreation,

and other activities in the three counties? Will the listing cause delays in projects? Commenters asked for assurances that there would be little, if any, economic impact and what appropriate mitigation measures would be acceptable to permit the activities to continue. It was suggested that the Service designate critical habitat and prepare an economic analysis as part of that proposal.

Service response: Under the Act and its implementing regulations, listing determinations are to be made solely on the basis of the best available scientific and commercial information regarding a species' status, without reference to possible economic or other impacts of such determination. 16 U.S.C. 1533(b)(1)(A); 50 CFR 424.11(b).

Section 7(a) of the Act, as amended, requires agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat if any is designated or proposed. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR Part 402. Section 7(a)(2) requires Federal agencies to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with the Service.

One Federal activity that may affect the California freshwater shrimp is the authorization by the Corps of Engineers to construct summer dams. For example, the Cazadero Dam Committee has received a permit to construct 28 temporary summer dams on the Austin Creek system, three of which are on East Austin Creek. These gravel structures are built by local residents to impound water for swimming and fire control. This permit is valid until 1990, provided that the permittee adheres to the general and special conditions of the permit such as notification of California Department of Fish and Game and the Corps of Engineers about any changes to pemitted activities. Special permit conditions require the permittee to reduce the total number of dams from 33 to 25 on the Austin Creek system. This includes a reduction in the number of dams from 5 to 3 on East Austin Creek where the shirmp occurs. The permit conditions also require the permittee to reduce the size and height of these dams, including the amount of water impounded, and to reduce the number and size of beaches by 1990 on the entire Austin Creek system. The Corps of Engineers may modify, suspend, revoke, or cancel the permit at any time before 1990 if any of these conditions are not met by the permittee. These restrictions were devised for the benefit of anadromous fish and the freshwater shrimp. Other methods of water retention for summer recreation and municipal water supplies that do not adversely affect the shrimp are being explored, such as joining an existing aqueduct and reservoir system. The Soil Conservation Service and the Coastal Conservancy are actively assisting in conservation measures for the shrimp on Salmon and Blucher Creeks.

Project delays can be avoided when proper measures such as habitat restoration or stream enhancement are taken to conserve and protect the shrimp and its habitat in the early stages of the planning process. To prevent delays in urban development, gravel and aggregate mining, agricultural, and recreational projects, early consultation with the Service on issues concerning the shrimp and its habitat is advised. Section 7 consultation must be completed within 90 days and can be concurrent with other environmental reviews. Therefore, delays, if any, should be minimal. Through formal consultation, the Service determines whether, and in what manner, a Federal agency can carry out its proposed action consistent with the"jeopardy" prohibition of section 7(a)(2) of the Act. If the Service finds that the action is likely to jeopardize the continued existence of the shrimp, the Service will work with the Federal agency, and applicant, if any, to attempt to develop reasonable and prudent alternatives.

Section 4(a)(3) of the Act, as amended, requires that to the maximum extent prudent and determinable, the Secretary designate any habitat of a species which is considered to be critical habitat at the time the species is determined to be endangered or threatened. The Service finds that designation of critical habitat is not prudent for the California freshwater shrimp at this time for reasons given below (see Critical Habitat section below). An economic analysis is done only if critical habitat has been proposed. Regardless, the Secretary is required to base the decision to list a species on the best available scientific and commercial information and not on economic considerations.

Comment 6: One commenter asked why it took so long to propose the shrimp and what was done to prevent the listing.

Service response: The California freshwater shrimp was proposed as a threatened species on January 12, 1977, in the **Federal Register** (42 FR 2507). That proposal was withdrawn on December 10, 1979 (44 FR 70796) under a provision of the 1978 amendments to the Endangered Species Act of 1973, which required withdrawal of all pending proposals if they were not finalized within 2 years of the proposal. On March 23, and October 30, 1980, the Service received a series of annotated maps delineating the known, current distribution of the shrimp based upon distributional data collected by California Department of Fish and Game in 1979 and 1980. Eng (1981) and Serpa (1985) submitted detailed information on the distribution, life history, and status of the shrimp. These maps and additional data provided significant new information on which to propose endangered status for the shrimp. In addition, work on listing other species precluded the Service from preparing and processing this proposal any earlier.

Summary of Factors Affecting the Species

After a thorough review and consideration of all information available, the Service has determined that the California freshwater shrimp (*Syncaris pacifica*) should be classified as an endangered species. Procedures found at section 4 of the Endangered Species Act (16 U.S.C. 1531 *et seq.*) and regulations (50 CFR Part 424) promulgated to implement the listing provisions of the Act were followed. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1). These factors and their application to the California freshwater shrimp (*Syncaris pacifica*) are as follows:

A. *The present or threatened destruction, modification, or curtailment of its habitat or range.* The preferred habitat of the California freshwater shrimp is quiet, tree-lined pools with undercut banks in free-flowing, permanent streams. Livestock, agricultural activities and development, water pollution, heavy earth-moving equipment, and residential development have encroached and/or threatened these stream banks. Siltation from poor soil conservation practices and the building of temporary summer dams have destroyed shrimp habitat. Water diversions from the streams, including pumping directly from the stream bottom, resulting in intermittent stream flow are also detrimental to the species. Many streams currently or historically

harboring the shrimp maintained a permanent flow. The shrimp is killed and its habitat is polluted if the water in summer dams is treated with chlorine or other chemicals to purify the water. These biocides are routinely placed in the water, resulting in aquatic invertebrate and plant die-offs each year. Various combinations of the above activities have extirpated the species from Stemple Creek, Laguna de Santa Rosa Creek, Santa Rosa Creek, and Atascadero Creek, and seriously reduced its range in the Napa River. These extirpations probably represent more than half of the historical range of the shrimp. The concrete lining of streams and rivers for flood control caused the extinction of *Syncaris pasadenae*, a species historically known from southern California. This flood control technique has extirpated the California freshwater shrimp in Santa Rosa Creek. The channelization and lining is likely to continue and increase as this area experiences rapid urban growth.

B. *Overutilization for commercial, recreational, scientific or educational purposes.* Not applicable.

C. *Disease or predation.* Predation by fish significantly threatens the California freshwater shrimp, especially in altered habitats where cover from tree roots and underwater vegetation has been reduced or is absent. Introduced bluegill (*Lepomis macrochirus*) exist in portions of Huichica Creek. Predation significantly threatens the California freshwater shrimp in East Austin Creek and Big Austin Creek where temporary summer dams confine steelhead (*Salmo gairdneri*), Sacramento squawfish (*Ptychocheilus grandis*), and Tule perch (*Hysterocarpus traski*) with the shrimp in artificial pools (Bill Cox, CDFG, pers. comm., 1985). The effect of these dams on shrimp and steelhead populations is being studied.

D. *The inadequacy of existing regulatory mechanisms.* The California State Fish and Game Commission listed the California freshwater shrimp as endangered. However, State law provides no protection on privately-owned lands. The species receives some protection in those portions of its range within Samuel P. Taylor State Park.

E. *Other natural or man-made factors affecting its continued existence.* In the past, the shrimp was capable of recovering from environmental extremes, such as drought and spring floods, that resulted in localized extirpations. Historic silvicultural practices may have limited the range of the species by altering normal hydrologic regime. Today, these natural events devastate populations of the shrimp because the current loss of suitable habitat makes it difficult to effectively repopulate affected areas.

Vandalism is a threat to the shrimp as more people in the area have become aware of its presence and site specific locations. Acts of vandalism such as placing toxicants into the water or deliberate spills of refined oil can be carried out by a single individual. One case was reported in 1987, when there was a die off of all aquatic invertebrates from East Austin Creek at the Boy Scout dam downstream almost to the confluence with Big Austin Creek as the result of the application of chlorine to the water. Although not carried out with the intention of harming the shrimp, the incident serves to illustrate the potential for vandalism.

The Service has carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by this species in determining to make this rule final. Based on this evaluation, the preferred action is to list the California freshwater shrimp as endangered. The continued degradation and loss of suitable habitat resulting from the threats discussed under Factor A in the "Summary of Factors Affecting the Species" could result shortly in a substantial loss of the remaining populations, especially those colonies in East Austin Creek. Because of conflicts with long standing economic interests and recreational practices in these streams harboring the California freshwater shrimp, the shrimp may shortly become extinct, as was the case with its congener, *Syncaris pasadenae*. Provided with protection from habitat degradation and loss, local isolated colonies may repopulate many portions of its historical range. Critical habitat is not being designated for the species at this time for the reasons discussed below.

Critical Habitat

Section 4(a)(3) of the Act, as amended, requires that to the maximum extent prudent and determinable, the Secretary designate any habitat of a species which is considered to be critical habitat at the time the species is determined to be endangered or threatened. The Service finds that designation of critical habitat is not prudent for the California freshwater shrimp at this time. As discussed under Factor E in the "Summary of Factors Affecting the Species," this species and its habitats are vulnerable to the introduction of water borne toxicants, and spills of refined oil and other such pollutants. Some such incidents could be carried out by a single individual, which makes the species vulnerable to acts of vandalism. These activities are difficult to regulate and control because the habitat of the shrimp predominately occurs on privately-owned land. Publication of critical habitat descriptions and maps would make this species and its habitats more vulnerable and would increase enforcement problems. The U.S. Army Corps of Engineers, the Federal agency most involved with the shrimp, is aware of the known localities. All other involved parties and landowners will be notified of the location and importance of protecting this species' habitat. Protection of this species' habitat will be addressed through the recovery process and through the section 7 jeopardy standard. Therefore, it would not be prudent to determine critical habitat for the California freshwater shrimp at this time.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Endangered Species Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing encourages and results in conservation actions by Federal, State, and private agencies, groups, and individuals. The Endangered Species Act provides for possible land acquisition and cooperation with the States and requires that recovery actions be carried out for all listed species. Such actions are initiated by the Service following listing. The protection required of Federal agencies and the prohibitions against taking and harm are discussed, in part, below.

Section 7(a) of the Act, as amended, requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat if any is being designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR Part 402. Section 7(a)(2) of the Act requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of a listed species or to destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with the Service.

The only known Federal activities that may affect the California

freshwater shrimp is the authorization by the U.S. Army Corps of Engineers (Corps) for the construction of 28 temporary summer gravel dams on the Austin Creek system, and the Soil Conservation Service bank stabilization and repair projects on Salmon and Bulcher Creeks. The summer gravel dams are built by local residents to impound water for swimming and fire control. This permit is valid until 1990, provided that the permittee adheres to the general and special conditions of the permit such as consultation with the appropriate State and Federal agencies. Special permit conditions required the permittee to reduce the number, size, and height of these dams, including the amount of water impounded, and to reduce the number and size of beaches by 1990. The Corps may modify, suspend, revoke, or cancel the permit at any time before 1990 if any of these conditions are not met by the permittee. This permit does not cover the other temporary non-gravel dams and bridges. These projects are handled on a project-by-project basis.

The Act and implementing regulations found at 50 CFR 17.21 set forth a series of general prohibitions and exceptions that apply to all endangered wildlife. These prohibitions, in part, make it illegal for any person subject to the jurisdiction of the United States to take, import or export, ship in interstate or foreign commerce in the course of a commercial activity, or sell or offer for sale in interstate or foreign commerce any listed species. It also is illegal to possess, sell, deliver, carry, transport, or ship any such wildlife that has been taken illegally. Certain exceptions would apply to agents of the Service and State conservation agencies.

Permits may be issued to carry out otherwise prohibited activities involving endangered wildlife species under certain circumstances. Regulations governing permits are at 50 CFR 17.22 and 17.23. Such permits are available for scientific purposes, to enhance the propagation or survival of the species, and/or for incidental take in connection with otherwise lawful activities. In some instances, permits may be issued during a specified period of time to relieve undue economic hardship that would be suffered if such relief were not available.

National Environmental Policy Act

The Fish and Wildlife Service has determined that an Environmental Assessment, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Endangered Species Act of 1973, as amended. A notice outlining the Service's reasons for this determination was published in the **Federal Register** on October 25, 1983 (48 FR 49244).

References Cited

Born, J.W. 1968. Osmoregulatory capacities of two Caridean shrimps, *Syncaris pacifica* and *Palaemon macrodactylus* (Paleomonidae). Biol. Bull. (Woods Hole, Mass.) 134:235–244.

California Department of Fish and Game. 1980. Unpublished range maps for *Syncaris pacifica.*

Eng, L.L. 1981. Distribution, life history, and status of the California freshwater shrimp, *Syncaris pacifica* (Holmes). Inland Fisheries Endangered Species Special Publication 18–1. Sacramento, Calif.

Hedgepeth, J.W. 1968. The atyid shrimp of the genus *Syncaris* in California. Int. Rev. Ges. Hydrobiol. 53:511–524.

Hedgpeth, J.W. 1975. California fresh and brackish water shrimps, with special reference to the present status of *Syncaris pacifica* (Holmes). Report submitted to the Office of Endangered Species, U.S. Fish and Wildlife Service.

Holmes, S.J. 1895. Notes on west American crustacea. Proc. Calif. Acad. Sci. 4:563–588.

Holmes, S.J. 1900. Synopsis of California stalk-eyed crustacea. Occas. Pap. Calif. Acad. Sci. 7:7–262.

Li, Stacey K. 1981. Survey of the California freshwater shrimp, *Syncaris pacifica,* in Lagunitas Creek, Marin County, California. Report submitted to the Marin Municipal Water District, Corte Madera, Calif. 18 pp.

Serpa, L. 1985. *Syncaris pacifica.* Unpublished document developed for The Nature Conservancy.

Author

The primary author of this rule is Dr. Jeurel Singleton, Sacramento Endangered Species Office, U.S. Fish and Wildlife Service, 2800 Cottage Way, Room E–1823, Sacramento, California. (916/978–4866 or FTS 460–4866).

List of Subjects in 50 CFR Part 17

Endangered and threatened wildlife, Fish, Marine mammals, Plants (agriculture).

Regulation Promulgation

Accordingly, Part 17, Subchapter B of Chapter I, Title 50 of the Code of Federal Regulations is amended, as set forth below:

PART 17—[AMENDED]

1. The authority citation for Part 17 continues to read as follows:

Authority: Pub. L. 93–205, 87 Stat. 884; Pub. L. 94–359, 90 Stat. 911; Pub. L. 95–632, 92 Stat. 3751; Pub. L. 96–159, 93 Stat. 1225; Pub. L. 97–304, 96 Stat. 1411 (16 U.S.C. 1531 *et seq.*). Pub. L. 99–625, 100 Stat. 3500 (1986), unless otherwise noted.

2. Amend § 17.11(h) by adding the following, in alphabetical order under "Crustaceans" to the List of Endangered and Threatened Wildlife:

§ 17.11 Endangered and threatened wildlife.

* * * * *

(h) * * *

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
Crustaceans							
*	*	*	*	*			
Shrimp, California freshwater	*Syncaris pacifica*	U.S.A.(CA)	NA	E	340	NA	NA
*	*	*	*	*			

Dated: October 4, 1988.

Susan Recce,

Acting Assistant Secretary for Fish and Wildlife and Parks.

[FR Doc. 88–25119 Filed 10–28–88; 8:45 am]

BILLING CODE 4310–55–M